LEDEPAGOD RESEARCH REPORT Preliminary results and recommandations to weather forecasters

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AGENCE NATIONALE DE LA RECHERCHE ANR

Context (1): Understanding team-leader and forecaster interactions

- ANR Project involving **researchers in management** (G. Kœnig, F. Allard-Poesi, U. Paris-East, Y. Giordano, L. Arena, U. Sophia-Antipolis) and weather **forecasters**

- Research on the interactions between team leaders and forecasters during expeditions in high altitudes (Himalaya, Karakoram) or Antarctica

Objective: Understand how and to what extent these experts having specific skills and knowledge are able to interrelate their expertise and share key decisions.

Context (2): during expeditions in high altitudes

- A **hostile, complex and fast changing environment** (lack of oxygen, coldness, snowfalls and wind, storms, etc.)

- An increasing **commercial pressure** towards performance

- In a « constraining » environment
  - Reaching the summit requires a **3-4 days window** of favorable weather (after acclimatization)
  - **Highly changing weather** conditions

= Team leaders are assisted by **professional forecasters** who send daily updated weather forecasts by emails (texts and meteograms), and, during summit ascent, sms or phone calls.

Preliminary results from 4 expeditions

- **Three commercial expeditions**
  - Antartica,
  - Karakorman
  - and Himalaya

One amateur expedition in Himalaya

Methods (1): Data Collection

• **Before the expeditions** :
•In-depth interviews with team leaders, & the leader of the forecasters' team

•**During the expeditions**:
• e-mails (texts and meteograms) and sms sent by weather forecasters and the team leaders
• Some recordings of conversations's ends of one forecaster had with team leaders during summit ascent
•Blogs for two expeditions

•**After the expeditions**:
•In-depth interviews with the team leaders, and the forecaster who assisted the teams during their summit attempts

+ documents (maps, sat pictures, photos, etc.)

Methods (2): Analysis

- **Chronology of the expeditions and of the different phases of the summit attempts after acclimatization.**

- Analysis of the frequencies of messages exchanges during summit attempts

- **Sequential analysis of the discursive practices of forecasters and team leaders during their interactions (via e-mails and phone conversations)**

Main Results (1)

Three configurations of interactions between the forecasters and the team leaders *(see glossary at the end of the presentation for technical words):*

From coordinated configuration: The expedition leader, relying on directives, asks the forecaster to perform a particular action; a demand that the latter will meet through assertives (i.e. the weather forecasts) and commissives (about future actions that the forecasters will undertake); a sequence that ends up with the first leader assessing the performance of the second through expressives and sometimes providing more detailed feedback through assertives. In this configuration, while forecasts have an influence **on the leader's decision, there is little (or no) collective sensemaking and shared decision.**

Or collaborated configuration: While coordinated configuration dominates in e-mails exchanges, the expedition leader, during phone calls, relies on directives to **ask the forecaster his opinion about what can or should be done** so that the second leader also formulates expressives (appreciation of the situation or the course of actions) and directives to suggest a particular course of action. During these particular episodes, **the forecaster and the team leader collectively make sense of the forecasts and share decision**.

To disrupted configuration: There is little if not no interactions because of technical problems (wrong sat phone number) and lack of (or absence of) understanding of the messages sent by the forecasters.

Main Results (2)

- **Variability in interactions patterns shows adaptive capability** from both the forecasters and the team leaders (that adapt their interaction's style to the client/ and supplier), which **depends on the prior mutual knowledge** of the participants.

- But it is also a sign of **a default of standardization** in the service provided by weather forecasters that can be **detrimental to its image and the service quality:**
  - Lack of uniformity of preparation before expedition;
  - of the format and language of the written messages (e-mails and sms),
  - Sometimes lack of clarity of the oral communication that can lead to misunderstanding,
  - No systematic feedback asked from the clients.

That contribute to misunderstanding and lack of trust

Recommandations

(1) Increase Value for Money: Standardize and facilitate communication

(2) Avoid basic communication traps

(3) Orient towards interactions *vs.* information only

(4) Be prepared to learn actively from the client

Recommandations (1) – Increase « Value for Money » Standardize and facilitate communication

For the team:

1/ Compare e-mails and sms from various forecasters (see examples below) and propose a **common format** for presenting the forecasts and a common language limiting expert abbreviation.

2/ Adapt forecast presentation for sms (and inform the team leader about the number of sms that are necessary for sending the forecast).

For the expedition leaders:

3/ Prepare a video tutorial and recap (in a Word format) on:

a/basic concepts of weather forecasts in high altitudes in order to define and explain the words you are using and frequent phenomena in high altitudes.

b/reading an e-mail and meteograms (which implies to legend the meteogram, explain how to read it, and then make a correspondance with the e-mail)

c/ reading a sms (explain the abbreviation)

d/ Ideally, the tutorial should test the skills via a MCQ

Recommandations (2)
Avoid basic communication traps

Before expedition departure:

1/ Ask the team leader about his previous experience, knowledge and skills in reading weather forecasts.
2/ If any doubt, a/ orientate towards the tutorial that should be proposed **for free, as necessary to provide a quality service, b/ offer complementary explanation upon request.**

3/ Check agreement on the devices that will be used to communicate
4/ Check e-mail / sat phone functioning *via* sending and receiving one message at least. In case of malfunctioning, fix and check again.

Recommandations (3)
Orient towards interaction vs. information only

At the beginning of the expedition (BC):

Ask for a systematic feedback after the first weather forecasts to test that the team receives it**.**

During the expedition

1/ Ask for a systematic feedback:

- **when the forecasts lack reliability (and try to explain why)**
- **About the team key decisions and strategies (after acclimatization)**

2/ Keep the same forecaster during summit push phase

3/ Avoid equivocal phrasing during phone calls (e.g. « it is not a sign for you to come back »)

→ Decision-making in high altitude is tricky. The interaction with the forecaster has a tremendous influence on the decision process. While good forecasts are important, they are not enough. They are **not necessarily understood**, they are **not necessarily trusted in**.

Recommandations (3)
Be prepared to learn from your client

After the expedition:

Ask for a systematic feedback *via*
1/ a standardized questionnaire
2/ and a free, e-mail or ideally an oral debrief

The service quality provided could be upgraded if the team of forecasters **REFLECTS ON ITS INTERACTIONS** with the clients (and not on the forecasts only) **and what makes it work (or not).**

Deepening the relationship with the client is essential to increase mutual understanding, trust and service quality

Examples of e-mails

Sender : Martin
Hello John!

General Situation: The jet is getting weaker and moving north. The pattern becomes anticyclonic in the next week and the weather more stable.

Wind:

17th moderate wind speed with around 40 km/h at 8000 meters.
18th: The jet is crossing Broad Peak. Wind picks up to about 60 km/h in the summit area.
19th and onwards: Wind is weaker again but still around 40 km/h at the summit. To the 22nd the wind might be stronger again. This is quite uncertain and has to be confirmed by the next model runs.

Weather:
17th: The air is still quite humid. In the afternoon cloudy and some snow. Precipitation tendency: 60%
18th and 19th: Partly sunny with some clouds in the afternoon. Precipitation tendency in the afternoon 30%.
From 20th on: Friendly mornings. Below 7500 Meters some convection in the afternoon. Precipitation tendency in the afternoon: 20%.

Temperature: Rising about 7 degrees in the next days. At summit to around -18 degrees.

All the best!

Martin

Good morning Manaslu team,

weather prevails into Saturday with recurrent snowfall. Sunday promises clear skies and veering upper level winds.

They represent the face of a broad band with strong upper level winds which are in the vicinity of the subtropical jet stream. Monday and Tuesday are also dry and brilliant with clear skies. Upper level winds increase. Wednesday appears mostly sunny. There are extended cloud fields north of Manaslu up to 6800 m amsl. Manalsu south is dry and sunny.Thursday and Friday should be pretty sunny with local convection, especially north of Manaslu.

Have a good time

fair winds

H team

General situation:

Today wind at high altitudes is weakening. The jet will bring higher speeds tomorrow and on April 22nd again. Afterwards the subtropical jet takes a more southern path. The jet builds a trough over western Nepal. Wind direction changes to southwest. The weather becomes more cloudy and precipitation will occur more often.

Weather:

April 20: Clouds will increase after todays sunny forenoon. Some showers are possible.

April 21: Sunny forenoon. Cumulus clouds growing in the afternoon.

Showers are possible.

April 22: Quite often cloudy with some showers in the second half of the

day.

April 23: Friendly morning. Afterwards cloudy and mostly dry.

April 24: Cloudy with some showers

April 25: Shower activity is increased

Wind at 7000 meters:

Weak wind speeds at 7000 meters for the next week.

Temperature at 7000 meters:

It becomes cooler.

Today: -17 degrees Centigrade

April 23: -20 degrees Centigrade

Afterwards no big changes.

Outlook:

Probably no major changes until the end of April.

Take care,

Glossary

Speech Acts	Definition	Example
Directives	Attempt to get the hearer to do something	"Check on her safety!"
Assertives	Represent as actual a state of affairs	"It's raining"
Commissives	Commit to a future course of actions	« I'll be right there »
Accreditives	Transfer permission or authorization from one agent to a recipient	"You have my permission to leave."
Expressives	Express the attitudes of the speaker about a state of affairs	"Thank you."